SOCIETIES AND ACADEMIES

THE INDIANA ACADEMY OF SCIENCE

AT the annual meeting of the Indiana Academy of Science, held at Indianapolis, Ind., on November 25–27, the twenty-fifth anniversary of the founding of the academy was celebrated. A special program was arranged under the direction of Honorable Amos W. Butler, one of the charter members of the academy and the acknowledged father of it. His plan was to bring together not only the present membership, but all the living ex-presidents and charter members as well as representatives of the educational and scientific societies of this and adjoining states. Among those who responded to this invitation were President Jordan, of Leland Stanford University; J. M. Coulter, of Chicago University; H. W. Wiley, chief of the Bureau of Chemistry, and B. W. Evermann, of the Bureau of Fisheries, Washington, D. C.; W. A. Noyes, of the University of Illinois; C. A. Waldo, of Washington University, St. Louis; Dr. A. Springer, of Cincinnati, and George T. Moore, of the St. Louis Botanical Gardens. In addition delegates were present representing the Indiana Teachers' Association, the Indiana Medical Society, the Indiana Section of the American Chemical Society, the Indiana Audubon Society, the Indiana Engineers' Society, the Indiana Historical Society, the Indiana Physics Teachers' Society, the Association of Science and Mathematics Teachers.

At the general sessions on Friday about three hundred were present to listen to the addresses of A. L. Foley, president of the academy, President Jordan and Professor J. M. Coulter. The same evening a banquet was held in the Claypool Hotel at which covers were laid for more than one hundred. Professor D. W. Dennis, of Earlham College, acted as toastmaster and responses were made by President Jordan, Dr. A. Springer, Hon. B. W. Everman, Professors J. M. Coulter, Glenn Culbertson, Geo. T. Moore and M. H. Stuart. The membership committee reported fifty-six names for membership. The following were elected officers for the coming year:

President—P. N. Evans, Purdue University.

Vice-president—C. R. Dryer, State Normal School.

Secretary—G. W. Benton, Shortridge High School, Indianapolis.

Assistant Secretary—A. J. Bigney, Moore's Hill College.

Treasurer—W. J. Moenkhaus, State University.

Editor—H. L. Bruner, Butler College.

The papers and addresses will appear in the *Proceedings*, which is published annually from an appropriation made by the state. The following is the program of the meeting:

Thursday, November 25

Meeting of the executive committee.

Informal dinner.

Address—"By Packtrain to the Tiptop of the United States in Quest of the Golden Trout," B. W. Evermann, U. S. Bureau of Fisheries, Washington, D. C.

Friday, November 26

President's Address—"Recent Progress in Physics," Dr. A. L. Foley, Bloomington.

Address—"Recent Progress in Chemistry," Dr. H. W. Wiley, chief of the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

Address—"Recent Progress in Botany," Dr. John M. Coulter, department of botany, Chicago University.

Greetings from other societies.

Informal luncheon.

Address—"Darwin Fifty Years after," Dr. David Starr Jordan, president Leland Stanford University, president of the American Association for the Advancement of Science.

The academy met in sections. A few papers, mostly those of historical character, were read.

Banquet—D. W. Dennis, toastmaster.

Saturday, November 27

Address—"Methods and Materials used in Soil Testing," H. A. Huston, Chicago.

Address—"Federal Control of International and Interstate Waters," B. W. Evermann, U. S. Bureau of Fisheries.

Address—"The Speed of Migration of Salmon in the Columbia River," Charles W. Greene, University of Missouri.

Address—"Some Hoosier and Academy Experiences," C. A. Waldo, Washington University, St. Louis, Mo.

Suggestions. Plans for the Academy—John S. Wright, Stanley Coulter, H. E. Barnard, W. E. Stone, C. Leo Mees, W. A. Cogshall.

The following is a complete list of papers presented:

General

"Thought Stimulation, under what Conditions does it Occur?" Robert Hessler.

"Does Blood Tell?" William B. Streeter, Greensboro, N. C.

"Hygiene of Indoor Swimming Pools, with Sug-

gestions for Practical Disinfection," Severance Burrage.

"Indiana Problems in Sewage Disposal," R. L. Sackett.

"Defective Elementary Science," William N. Heiney.

"Some Hoosier and Academy Experiences," C. A. Waldo, Washington University.

"Darwin Fifty Years After," David Starr Jordan, president Leland Stanford Jr. University.

"Streamers that Show Reversal of Curvature in the Corona of 1893," John A. Miller.

"That Erroneous Hiawatha," Albert B. Reagan.

Chemistry

"Methods and Materials used in Soil Testing," H. A. Huston, Chicago, Ill.

"The Discovery of the Composition of Water" (illustrated), W. A. Noyes, University of Illinois.

"Molecular Rearrangements of Derivatives of Camphor," W. A. Noyes.

"Use of Refractometer in Dry Substance Estimation," A. Hugh Bryan, U. S. Bureau of Chemistry.

"Conductivity and Ionization of Solutions of Certain Salts in Ethyl Amine," E. G. Mahin.

"Recent Progress in Chemistry," H. W. Wiley, chief of the Bureau of Chemistry, U. S. Department of Agriculture.

"Electric Osmose," Harry N. Holmes.

"On a New Complex Copper Cyanogen Compound," A. R. Middleton.

"Determination of Endothermic Gases by Combustion," A. R. Middleton.

Mathematics

"A Method of Instruction in Solid Analytical Geometry," Arthur S. Hathaway.

"The Relative and Reduced Equations of Motion of n Bodies in Space of n Dimensions or Less," Arthur S. Hathaway.

"Discussion of the Regular Inscribed Pentagon," John C. Gregg.

"If the Bisectors of Two Angles of a Triangle are Equal, those Angles are Equal," John C. Gregg.

Physics

"Direct Reading Accelerometers," C. R. Moore.

"Recent Work in Wood Physics," W. K. Hatt.

"Expansion of Paving Blocks," W. K. Hatt.

"Strength of Building Block," H. H. Schofield.

"Slip of Riveted Joints," Albert Smith.

"Polarization of a Cadmium Cell," Rolla R. Ramsey.

"Investigation of the Point Discharge in a Magnetic Field," Oscar W. Silvey.

"The Tenacity of Gelatine," Arthur L. Foley.

"Objections to LaPlace's Theory of Capillarity," Arthur L. Foley.

"Cohesion of Water as Modified by Certain Dissolved Salts," Edwin Morrison.

Geology and Geography

"Some Features of Delta Formation," Charles R. Dryer.

"A Physiographic Survey of an Area near Terre Haute, Ind.," Charles R. Dryer, Melvin K. Davis.

"The Collecting Area of the Waters of the Hot Springs of Hot Springs, Ark.," A. H. Purdue, University of Arkansas.

"The Geographical and Geological Distribution of Some Pleistocene Mammals," O. P. Hay, U. S. National Museum.

"On the Restoration of Skeletons of Fossil Vertebrates," O. P. Hay.

"Paleontology and the Recapitulation Theory," E. R. Cummings.

"The Tippecanoe, an Infantile Drainage System," W. A. McBeth.

"Observations on Cyclones and Anti-cyclones of North Temperate Latitudes," W. A. McBeth.

Zoology

"A Paired Entoplastron in Trionyx and its Significance," Henry H. Lane, Oklahoma State University.

"Physiological Explanation of the Psycho-physical Law of Weber," Guido Bell.

"On the Nature and Source of Thrombin," L. J. Rettger.

"Federal Control of International and Interstate Waters," B. W. Evermann, U. S. Bureau of Fisheries.

"By Packtrain to the Tiptop of the United States in Quest of the Golden Trout" (illustrated), B. W. Evermann.

"The History of Zoology in Indiana," C. H. Eigenmann.

"An Analytic Study of the Faunal Changes in Indiana," Walter L. Hahn, South Dakota State Normal School.

"Some Notes on Parasites found in Frogs in the Vicinity of St. Paul in June," H. L. Osborn, Hamline University.

"The Mocking Bird in Indiana," A. J. Bigney.

"Cross-fertilization among Fishes," W. J. Moenkhaus.

"Observations on Woodpeckers," John T. Campbell.

"The Development of the Reproductive Organs of *Chara fragilis*," George N. Hoffer.

"Paroxysmal Hemoglobinuria," Oliver P. Terry.

"The Evolution of Insect Galls as Illustrated by the Genus Amphibolips," Mel T. Cook, Delaware College.

"The Speed of Migration of Salmon in the Columbia River," Charles W. Greene, University of Missouri.

"Observations on Cerebral Localization," J. Rollin Slonaker, Leland Stanford Jr. University.

"A Study of the Composition of Butter Fat," O. F. Hunziker, G. W. Spitzer.

"The Nasal Muscles of Vertebrates," H. L. Bruner.

Botany

"Physiological Apparatus," Frank M. Andrews.

"Some Monstrosities in Plants," Frank M. Andrews.

"A List of Algæ," Frank M. Andrews.

"Revegetation of the Salton Basin" (illustrated), D. T. MacDougal, director Desert Laboratory, Tucson, Ariz.

"Forest Conditions in Indiana," Stanley Coulter.

"Some Additions to Indiana Flora, Number 4," Charles C. Deam.

"The Medicinal Value of *Eupatorium perfoliatum*," A. J. Bigney.

"Right and Wrong Conceptions of Plant Rusts," J. C. Arthur.

"The Effect of Preservatives on the Development of Penicillium," Katherine Golden Bitting.

"Recent Progress in Botany," John M. Coulter, Chicago University.

J. H. RANSOM,
Secretary

THE KANSAS ACADEMY OF SCIENCE

THE academy held its forty-second annual meeting at Ottawa, Kans., on December 28, 29 and 30.

After the usual business meeting on the evening of December 28, Professor Frank E. Jones, of the University of Kansas, lectured on "A Tour of the Philippines." The lecture was very interesting and illustrated by projections of many photographs, obtained by the author during several years' residence in the islands.

On Wednesday the reading and discussion of papers were taken up from the following program:

"A Suggested Revision of the Terminology of Agriculture," by L. C. Wooster.

"An Esker near Mason, Mich.," by L. C. Wooster.

"A Rare Mexican Cycad," by W. B. Wilson.

"Recent Methods in Organic Analysis," by E. R. Groner.

"Successful Termination of the Loco Weed Investigation," by L. E. Sayre.

"Analysis of Food Accessories under the Food and Drugs Law," by L. E. Sayre.

"Physical Culture in Schools," by J. H. Klopfer.

"The Dance and Shamanic Performances of the Quileute Indians," by A. B. Reagan.

"Sketches of Indian Life and Character," by A. B. Reagan.

"Maxwell's Method of Comparing Electrostatic Capacity with Self-inductance," by J. A. G. Shirk.

"A New Geometrical Figure and its Possible Application," by E. C. Warfel.

"Preliminary Note on Measuring the Speed of Photographic Shutters," by H. I. Woods.

"Pollution of Domestic Ground Water Supply," by S. J. Crumbine.

"Tools and Toys," by B. B. Smyth.

"Milk-sickness in Kansas," by L. C. R. Smith.

"The Flora of Minima Hill," by L. C. R. Smyth.

"An Embryonic Plesiosaur Propodial," by R. L. Moodie.

"Provisional List of the Flora of Kansas," by B. B. Smyth, John H. Schaffner and L. C. R. Smyth.

"Is the Dakota Formation Upper or Lower Cretaceous?" by J. E. Todd.

"Further Notes on Pleistocene Drainage," by J. E. Todd.

"An Aberrant Walnut?" by I. D. Cardiff.

"Fifty Years of Evolution," by A. H. Thompson.

"Additions to the List of Kansas Coleoptera for 1909," by W. Knaus.

"Note on the Food of *Bothrotes Knausii* Caley," by W. Knaus.

"Notes on Kansas Coleoptera," by W. Knaus.

"Kansas Coleoptera—the Families Throscidæ, Lampyridæ, Malachidæ, Clevidæ, Cupescidæ, Cioidæ, Melandoyidæ, Oedemeridæ, Anthicidæ, Pyrochroidæ and Rhipiphoridæ," by W. Knaus.

"Changes in the Cottonwood Limestone South of Cottonwood Falls," by J. A. Yates.

"On the Coloring Matter in Fruits," by E. H. S. Bailey and E. L. Tague.

"On the Occurrence of Manganese in Waters," by C. C. Young.

"A Comparison of Some Methods of Making Thymine," by D. F. McFarland.

"On Food Adulterations," by H. L. Jackson.

"The Prairie Dog Situation in Kansas," by T. H. Scheffer.

"Investigating the Mole," by T. H. Scheffer.

"Catalytic Tests and Treatment of Systematic Phtysis," by W. P. McCartney.

"Midcontinent Petroleum," by F. W. Bushong.

"Some Difficulties in Arsenic Tests," by F. B. Dains.

"In the Laramie and Niobrara Cretaceous," by C. H. Sternberg.

"Observations on Cytology of *Equisetum*," by I. D. Cardiff.

The time was closely occupied in this order till 6 P.M., when the academy repaired to Charlton Cottage to partake of an elegant banquet tendered by the local members.

Following the banquet the retiring president, Dr. F. B. Dains, gave an address on "The Lives of Silliman, Hare and Cook, and their Influence on American Science." Dr. J. T. Lovewell gave some personal reminiscences of the elder Silliman and of the methods of teaching chemistry fifty years ago.

On Thursday the reading and discussion of papers were resumed, and in the free and instructive comments and questions, much interest was manifested and advantages gained.

The academy is growing in numbers and influence, having now about two hundred members, and is enlarging its library and museum. In the near future it will have rooms in the Memorial Building, now being erected in Topeka, the state capital, and have a permanence of quarters it has hitherto lacked. The annual volumes of *Transactions*, now published by the academy, are growing in size and value and are welcomed as exchanges by most scientific societies. The present officers were reelected for the ensuing year:

President—F. B. Dains, Topeka.

Vice-presidents—J. M. McWharf, Ottawa, and A. J. Smith, Emporia.

Treasurer—F. W. Bushong, Lawrence.

Secretary—J. T. Lovewell, Topeka.

Topeka will be the place of next meeting and the time will probably be during the Christmas holidays. J. T. Lovewell

The Chicago Academy of Sciences

At the annual meeting of the Chicago Academy of Sciences, held January 11, the following officers were elected:

President—Dr. T. C. Chamberlin.

First Vice-president—Mr. A. L. Stevenson.

Second Vice-president—Mr. C. H. Blatchford.

Secretary—Dr. Wallace W. Atwood.

Head Curator—Mr. Frank C. Baker.

The honorary curators were elected as follows: Dr. Thomas C. Chamberlin, general geology; Dr. Stuart Weller, paleontology; Dr. Oliver C. Farrington, mineralogy; Professor E. J. Hill, botany.

Annual reports were received from the trustees, the secretary, the treasurer and the curator. During the past year the emphasis in the museum work has been placed upon ecological exhibits and on the preparation of loan collections suitable for use in the public and private schools of the city. The demand for such material has greatly exceeded the supply and the work will be conducted on a larger scale during the coming year. The academy has undertaken during the past year to enter more intimately and actively into cooperation with the educational institutions of the city to improve and extend the teaching of nature study to the children and the science courses in high schools. To this end a course of instruction was offered to the teachers by Dr. Henry C. Cowles, of the University of Chicago, on "Plants and their Field Relations." For the children, a series of Saturday afternoon lessons was arranged. These were given by Dr. Herman S. Pepoon. The children were admitted as delegates from the seventh and eighth grades in the public schools, each delegate representing his, or her, class. Over one hundred applicants applied for this course and the reports from the teachers and the principals indicate that each delegate returned to the class with an enthusiastic report of the work which had been offered at the academy. These new lines of work were supplemented by lectures given at the schools by members of the staff and by evening lectures at the academy building which were open to the public and to which school delegates were also admitted. The cooperation on the part of the teachers and the principals has been most gratifying and the trustees of the academy have appropriated funds for the continuation and development of the educational and museum extension work during the coming year.

During the past year the academy published a bulletin, on the "Higher Fungi of the Chicago Region," by Dr. Will S. Moffatt. This bulletin is illustrated with twenty-three full-page half-tone plates.

Mr. Frank C. Baker has completed for publication a monograph on the "Lymnæidæ of Middle and North America." This work is the result of ten years of study involving the examination of all the large collections of mollusks in the United States.

Other research work is in progress and additional publications will probably appear during the coming year.

The relationship of the academy to the public during the past year may be tabulated as follows:

Annual attendance to museum	300,000
Annual attendance to public lectures	4,000
Attendance at the 12 lessons in the first teachers' course (28 teachers × 12 lessons)	336
Attendance at the 6 lessons in the young people's course (6 lessons × 122 pupils)	732
School children addressed by delegates to young people's course	50,000
Children addressed at schools by Mr. F. C. Baker, of museum staff	11,303
Loan collections from museum (129 school rooms averaging 50 pupils)	6,450
Total	372,821

WALLACE W. ATWOOD,
Secretary

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 365th meeting of the society was held January 22, in the main hall of George Washington University, with President T. S. Palmer in the chair and about a hundred persons present.

The following communication was presented:

Fluctuation of Animal Population in the Northwest: ERNEST THOMPSON SETON.

The speaker described conditions as to animal life observed during his long residence in Manitoba, instancing the marked changes in numbers of indigenous mammals to be seen from year to year. Shrews, muskrats, rabbits, lynxes, wolves and other animals were subject to great fluctuation in numbers. In some cases the causes of change were partially known, but in others they could not be explained. Mr. Seton exhibited charts showing diagrammatically the yearly collections of skins of fur-bearing animals by the Hudson's Bay Company. These showed in a clear way the enormous fluctuations in the fur returns during the years from 1751 to 1891.

An interesting discussion followed. D. E. Lantz called attention to the fact that the prevailing fashions in fur garments often have much to do with the numbers of skins collected. Dr. Palmer showed how the prevailing fashion influences the sale of bird skins and feathers, and how it has often disastrously affected the bird population of certain districts and nearly exterminated a species.

Vernon Bailey told of the occasional vast increases in numbers of small mammals, referring especially to the field mice (*Microtus montana*), which in 1907 and 1908 did enormous injury to crops in the Carson and other valleys of the west. In this instance predatory mammals and birds assisted by unfavorable weather conditions were recognized factors in removing the plague of mice.

Dr. A. D. Hopkins told of the enormous fluctuations in numbers of certain insects, well-known illustrations being afforded by plagues of locusts and crickets and the periodical appearance of cicadas. He gave as a particular illustration the northward migration of the southern pine bark beetle (*Dendroctonus frontalis*), which in 1891 and 1892 culminated in the destruction of a large part of the pine and spruce timber on about 75,000 square miles of the forests of Pennsylvania, Maryland, Virginia and West Virginia. Being a southern species, it could not withstand the extreme cold of the winter of 1892–3, and the species perished throughout the region named, while native insects were not killed. In this case, the sudden change in numbers was well understood.

Dr. Barton W. Evermann called attention to the fact that there is a well-marked periodicity in the run of certain species of fishes. This is notably the case with the humpback salmon in the rivers of the Puget Sound region and the sockeye salmon in the Fraser River. A large run of humpbacks takes place in the odd years (as in 1905, 1907, etc.) and a much smaller run in the even years. A big run of sockeyes occurs every fourth year, the run in each of the three other years of the cycle being smaller. The reasons for this periodicity are not fully understood. These species of salmon, like all salmon on our west coast, spawn only once, then die, even before the eggs hatch; so that no Pacific salmon ever saw any of its children or either of its parents. The life of the sockeye salmon is probably four years. The eggs laid in the Fraser River produce fish which come back four years later to spawn. If the spawning conditions in some year of the remote past were exceptionally favorable and an unusual number of young fish hatched, every fourth year thereafter ought to be a big year for that species. It is believed that an explanation like this is the correct one.

The discussion was closed by Dr. Palmer and Mr. Seton, and the society then adjourned.

D. E. LANTZ,
Recording Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

THE fifty-ninth regular meeting of the society was held at the Ebbitt House, January 29, 1910, at eight o'clock, P.M.; President Wm. A. Taylor presided. The following papers were read:

Legal Regulation of Plant Diseases: Dr. HAVEN METCALF, U. S. Bureau of Plant Industry.

Further Botanical Evidence regarding Coastal Subsidence: H. H. BARTLETT, U. S. Bureau of Plant Industry.

The full paper will appear in a forthcoming number of *Rhodora.*

The Use of the Immersion Refractometer in the Study of Plant Extracts: H. C. GORE, U. S. Bureau of Chemistry.

The Zeiss immersion refractometer, an instrument which measures index of refraction of liquids in terms of an arbitrary scale, was shown and its probable usefulness in vegetable physiological studies was illustrated by readings on cane sugar and on cider. The arbitrary scale is so constructed that in many cases the readings, less the amounts due to the presence of water, are almost exactly proportional to the amounts of dissolved substance. This is particularly true for dilute solutions, *e. g.*, dilute solutions of sugars. Tables can therefore easily be constructed for any substances or groups of substances for which tables are now lacking. Solutions can be examined rapidly. Small amounts are required, 1 c.c. being sufficient, though more is desirable, and the solution need not be clear. Further, a definite physical constant, the index of refraction, is determined.

The instrument is brought to the attention of botanists because it is well adapted to field work, and has been found to be very useful in detecting slight differences in sugar content, therefore it may be used in making selections among sugar-containing plants and fruits, and in detecting differences in soluble carbohydrates due to slight changes in environment. The refractometer has been found very useful in the study of the rate of fermentation of apple cider in cold storage. It is also widely used in technical work and in food analysis.

A preliminary study of the ratio of the scale readings, less 15, the reading due to pure water at 17.5° C., to the per cent. of cane sugar in solution, shows that the ratio varies from 3.75 to 4.09 for amounts of sugar from 2.5 to 16 per cent., the figures being as follows:

Per Cent. of Cane Sugar	Ratio of Scale Readings less 15, to Per Cent. of Sugar.
2.5	3.75
5.0	3.81
9.0	3.91
13.0	4.01
17.0	4.09

A study of the ratio of the scale readings less 15, to the total solids, of 13 samples of freshly pressed cider showed the ratio to be 3.91, with a maximum of 4.09 and a minimum of 3.79. It is practicable, therefore, to work out for a plant juice a factor which will relate the scale readings to the content of total solids. By making a proper allowance, to be determined experimentally, for the readings due to the non-sugar solids, the sugars can probably be estimated with a fair degree of accuracy.

W. W. STOCKBERGER,
Corresponding Secretary

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

AT the 441st regular meeting, held February 1, 1910, Dr. D. S. Lamb read a paper entitled, "Like Father Like Son: A Study in Heredity."

After a general introduction the speaker gave especial consideration to variations and illustrated with many cases taken from Darwin, Reid, Thomson, Woods, Fay and others. As to reversions, he was inclined to think that many so-called reversions are simply arrests of development. He thought that the attitude of writers on heredity now in regard to the inheritance of acquired characters is that of a negative. As to the inheritance of disease, there was no doubt that a tendency to disease was frequently inherited. The probabilities are that the sperm or ovum is affected by the disease of the parent. He disbelieved in telegony and maternal impressions. A brief statement was made of the more important theories of heredity; he inclined to the Mendelian principle as set forth by Bateson.

In the discussion Mrs. G. R. Stetson and Dr. G. M. Kober pointed out the importance of the problem of heredity in its relation to practical life, especially to education, marriage, public health, and the treatment of criminals and defectives.

Dr. J. Walter Fewkes exhibited and commented on some drawings of divinities, altars and other paraphernalia of worship made by Hopi Indians under his supervision.

I. M. CASANOWICZ,
Secretary